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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,608	12/03/2004	Lennart Olsson	02386.0095	7120

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EXAMINER	
YI, STELLA KIM	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,608	OLSSON, LENNART	
	Examiner	Art Unit	
	Stella Yi	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/03/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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DETAILED ACTION

Summary

1. This is the Initial Office Action for Application No. 10/516,608 on "Method and Device for Transferring a Pattern" filed on December 3, 2004.

2. This application is a national phase application based on PCT/SE2003/001003 filed on June 16, 2003.

3. Claims 1 and 4-12 are currently pending and have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 4-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHOU (5,772,905) and in view of HEIDARI et al. (2003/0141291).

Regarding Claim 1, CHOU discloses a nanoimprint lithography method that comprises pressing a mold into a thin film on a substrate to create a relief and, later removing the compressed area of the film to expose the underlying substrate and to form a resist pattern on the substrate that replicates the obverse of the protruding pattern of the mold (a method for transferring at

least one pattern in the form of a structure from a pressing means to a deformable layer which is arranged on a planar surface of a substrate) (Col.3, lines 31-36). CHOU does not explicitly disclose connecting a power source to the pressing means in heating the deformable layer on the substrate. However HEIDARI et al. discloses a device for homogeneous heating for nanoimprint lithography wherein the heating device comprises a heating layer which is connected to a power source (Page 2, [0024]). A current is supplied to the said heating layer from the power source and is directed to the areas of the heating layer (Page 2, [0025]). Consequently the energy distribution, as well as the temperature distribution, along the surface of the heating layer will be very uniform (Page 2, [0025]). This uniformly distributed energy is conducted, via, the electrically insulating layer and the supporting plate, into the object, which is homogeneously heated (Page 2, [0025]) (current is passed through the pressing means and indirectly heats the layer). The surface of the heating layer is of at least the same size as the supporting surface (power source has at least one contacting surface connected to a contacting surface of said pressing means, said contacting surface of said pressing means having a shape and orientation similar to the contacting surface of said power source, thereby giving a substantially homogeneous current density in said pressing means) (Page 2, [0024]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the

heating device of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claim 4, CHOU does not explicitly disclose a power source being connected between the inner and outer periphery of the pressing means. However, HEIDARI et al. discloses in Figure 2 a power source that is connected between the inner and outer periphery of the pressing means. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the power source of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claim 5, CHOU does not explicitly disclose connecting a power source with the aid of connecting means extending in the radial direction of the pressing means. However, HEIDARI et al. discloses in Figure 3 a power source being connected with the aid of two or more connecting means which extend in the radial direction of the pressing means. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the connecting means for the power source of HEIDARI et al. in order to achieve acceptable results in the manufacture of

nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claim 6, CHOU discloses a rectangular shaped pressing means with protruding pattern or plurality of features having a desired shape wherein the said pressing means is made of electrically conductive materials (Col.4, lines 44-49). CHOU does not explicitly disclose arranging the pressing means in an electrically conducting holder means. However, HEIDARI et al. discloses a rectangular shaped supporting plate (holder means) made of electrically conductive materials such as aluminum (Page 2, [0024]). The said supporting plate (holder means) is connected to a power source (Page 2, [0024]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have arranged the pressing means of CHOU on the holder means of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claims 7, 11, and 12, CHOU discloses an nanoimprint lithography device that comprises pressing a mold into a thin film on a substrate to create a relief and, later removing the compressed area of the film to expose the underlying substrate and to form a resist pattern on the substrate that replicates the obverse of the protruding pattern of the mold (a device for

transferring at least one pattern in the form of a structure from a pressing means to a deformable layer which is arranged on a planar surface of a plate-shaped substrate) (Col.3, lines 31-36). The device comprising:

a first holder means (12-Fig.1A);

a second holder means (18-Fig.1A) for receiving the substrate (20-Fig.1A) and the pressing means (14-Fig.1A) respectively, the device being arranged to apply a pressure between the first holder means and the second holder means (Fig.1B).

CHOU does not explicitly disclose the device further comprising a power source and electrical connecting means. However, HEIDARI et al. discloses a device for homogeneous heating for nanoimprint lithography wherein the heating device comprises a heating layer which is connected to a power source (Page 2, [0024]). A current is supplied to the said heating layer from the power source and is directed to the areas of the heating layer (Page 2, [0025]). Consequently the energy distribution, as well as the temperature distribution, along the surface of the heating layer will be very uniform (Page 2, [0025]). This uniformly distributed energy is conducted, via, the electrically insulating layer and the supporting plate, into the object, which is homogeneously heated (Page 2, [0025]) (current is passed through the pressing means and indirectly heats the layer). The surface of the heating layer is of at least the same size as the supporting surface (power source has at least one contacting surface connected to a contacting surface of said pressing means, said contacting surface of said

pressing means having a shape and orientation similar to the contacting surface of said power source, thereby giving a substantially homogeneous current density in said pressing means) (Page 2, [0024]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the heating device of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claims 8 and 9, CHOU does not explicitly disclose a power source being connected between the inner and outer periphery of the pressing means and the thickness of the pressing means. However, HEIDARI et al. discloses in Figure 2 a power source that is connected between the inner and outer periphery of the pressing means and the thickness of the pressing means is greater at the inner periphery than the outer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the power source of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Regarding Claim 10, CHOU discloses a rectangular shaped pressing means with protruding pattern or plurality of features having a desired shape wherein the said pressing means is made of electrically conductive materials (Col.4, lines 44-49). CHOU does not explicitly disclose an electrical connecting means. However, HEIDARI et al. discloses a rectangular shaped supporting plate (holder means) made of electrically conductive materials such as aluminum (Page 2, [0024]). The said supporting plate (holder means) is connected to a power source (Page 2, [0024]). HEIDARI et al. also discloses that resistivity of the holder and the substrate is the same (Page 2, [0025]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of CHOU to include the electrical connecting means of HEIDARI et al. in order to achieve acceptable results in the manufacture of nanostructures in nanoimprint lithography where the film applied to the substrate must be heated extremely homogeneously before the mold is pressed into the film (Page 1, [0004]).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stella Yi whose telephone number is 571-270-5123. The examiner can normally be reached on Monday - Thursday from 8:00 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner,
Art Unit 1791

SY

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